



## Books & Reports

### Ultra-Lightweight Self-Deployable Nanocomposite Structure for Habitat Applications

A document discusses self-deployable, rigidized structures that are ultra-lightweight and have gas barrier properties, space durability, and high impact resistance. Developed here are microcellular-foamed sandwich structures made from nanocomposite shape memory polymers (SMPs) with Cold-Hibernated Elastic Memory (CHEM) deployed technique for space structural components including space habitats. This type of foam sandwich also does not suffer from the toxicity problems of conventional foams, and has higher mechanical properties than those processed with conventional techniques. This design can be com-

pacted into a very small volume for launch. Once deployed, the microcellular structure can use the heat from the Sun to recover 98 to 100 percent of its shape.

*This work was done by Seng C. Tan of Wright Materials Research Corp. for Johnson Space Center. Further information is contained in a TSP (see page 1).*

*In accordance with Public Law 96-517, the contractor has elected to retain title to this invention. Inquiries concerning rights for its commercial use should be addressed to:*

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*Refer to MSC-24290-1, volume and number of this NASA Tech Briefs issue, and the page number.*

### Room-Temperature Ionic Liquids for Electrochemical Capacitors

A document discusses room-temperature ionic liquids (RTILs) used as electrolytes in carbon-nanotube-based, electrochemical, double-layer capacitors. Unlike the previous electrolyte (EtNB4 in acetonitrile), the RTIL used here does not produce cyanide upon thermal decomposition and does not have a moisture sensitivity.

*This work was done by Heather Fireman, Leonard Yowell, and Padraig G. Moloney of Johnson Space Center; Sivaram Arepalli, P. Nikolaev, and C. Huffman of ERC, Inc.; Jud Ready, C.D. Higgins, S. P. Turano, P. A. Kohl, and K. Kim of Georgia Tech Research Institute. Further information is contained in a TSP (see page 1). MSC-24190-1*